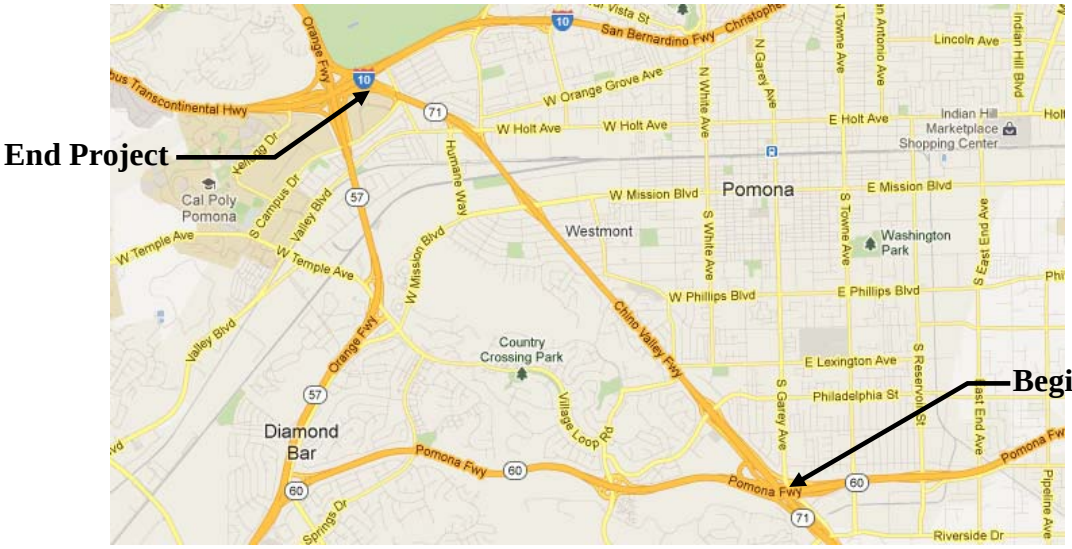
Qualitative $PM_{2.5}$ and PM_{10} Hot-Spot Analysis

CONVERSION TO FREEWAY WITH HIGH OCCUPANCY VEHICLE (HOV) LANES



State Route 71, Post Miles 0.5 to 4.8
IN LOS ANGELES COUNTY, CALIFORNIA
FROM STATE ROUTE 60
TO INTERSTATE 10

Caltrans EA: 07-21060
Project ID: LA0B951

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Introduction

The United States Environmental Protection Agency (EPA) promulgated the National Ambient Air Quality Standard (NAAQS) for particulate matter on July 18, 1997, establishing a standard for particulate matter less than or equal to 2.5μm in size ($PM_{2.5}$). The EPA then published their final rule on particulate matter designations and classifications in the Federal Register on January 5, 2005, and established areas designated as nonattainment, unclassifiable or attainment/classifiable. In March 2006, the EPA published a final rule that established the transportation conformity criteria and procedures (71FR12468) as well as the *"Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas"* (March 2006 Guidance), which provides guidance and summarizes requirements for hot-spot analyses for projects in maintenance and nonattainment areas. The EPA later revised the level of the 24-hour $PM_{2.5}$ standard to 35 micrograms per cubic meter ($\mu g/m^3$) (71FR61144) in October 2006.

The March 2006 final rule requires a qualitative $PM_{2.5}$ and PM_{10} hot-spot analysis to be completed for a project of air quality concern (POAQC). The final rule in 40 CFR 93.123(b)(1) defines the POAQC as:

(i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
(ii) Projects affecting intersections that are at Level-of-Service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
(v) Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The project under study in this Qualitative $PM_{2.5}$ and PM_{10} Hot-Spot analysis (Analysis) proposes to convert the existing expressway along State Route 71 (SR-71) to a full freeway with 3 mixed flow lanes and a high occupancy vehicle (HOV) lane in each direction of travel approximately from SR-60 to Interstate 10 (I-10). Based on the current and forecast traffic data, the SR-71 corridor within the limits of the project currently experiences and is projected to have a significant number of diesel vehicles. The project is therefore considered to be of air quality concern as described in 40 CFR 93.123(b)(1)(i); and requires this Analysis.

This Analysis has been prepared according to the procedures and methodology provided in the March 2006 Guidance jointly published by EPA and FHWA; and does not include dispersion analysis provided in the December 2010 *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (Quantitative Guidance) since it is within the grace period allowed.

Project Description and Location

SR-71 is a major regional highway transportation facility traversing parts of Los Angeles, San Bernardino, and Riverside County. It is a connecting link for major east-west corridors passing through the area and serves as an inland passageway for interregional travel between San Diego and the eastern portion of the Los Angeles area. The route also serves heavy commute traffic originating in the communities of Chino, Ontario, and Pomona that is destined for employment centers in Orange and Los Angeles Counties. The purpose of this project is to alleviate traffic congestion by increasing capacity on SR-71 from I-10 to SR-60 to handle the forecasted traffic volumes in coming years due to extensive development in the region.

SR-71 is currently configured as a two-lane expressway throughout most of the project limits. SR-71 has a federal functional classification of P1M (Urban-Extension of Rural Principal Arterial into Urban Areas). SR-71 is included in the Federal Surface Transportation Assistance Act (STAA) national network for oversized trucks within the project limits. SR-71 is not included in the Department of Defense California Priority Network; and is not part of the Interregional Road System (IRRS).

SR-71 experiences congestion while carrying substantial traffic volumes through the study area during peak hours. Travel demands and urban growth projections indicate that unacceptable levels of service will extend for longer periods of time over larger sections during peak periods unless improvements are made.

There is a need to eliminate signalized at-grade intersections to reduce accidents and improve safety by implementing the current Caltrans design standards. The following list is a summary of problems related to the SR-71:

- Congestion, existing and future;
- Growth and the need for carpool incentives;
- Local circulation problems;
- Accidents;
- Rural designs in urban areas; and
- Missing gap in freeway HOV system.

The proposed project passes through the City of Pomona (City) in the eastern Los Angeles County. The project area is generally urbanized and the communities along the proposed project are largely developed. Existing land uses in the City along the SR-71 include: residential south of Mission Boulevard except for some commercial uses near the intersection with Rio Rancho Road; and a mix of commercial and industrial north of Mission Boulevard.

There are several educational institutions along the SR-71, including elementary, middle, and high schools: Westmont Elementary School approximately 740 feet west; Decker Elementary School approximately 1500 feet west; Ranch Hills Elementary School approximately 0.92 mile west; Ganesha High School and Marshall Middle School less than 0.25 mile northeast; Lexington Elementary School less than 0.25 mile northeast; and Garey High School approximately 0.4 mile northeast. Respective land uses along the SR-71 corridor and schools are identified in Figure 1.

An Initial Study/Environmental Assessment (IS/EA) that led to a Negative Declaration/Finding of No Significant Impact (ND/FONSI) was prepared by Caltrans and was approved by the FHWA in June 2002. Caltrans is currently in the process of preparing an Environmental Re-evaluation for the proposed project. This Analysis is being performed to meet the EPA's requirements in its March 10, 2006 final rule on particulate matter hot-spot analysis.

The project proposes to add one (1) mixed flow lane and one (1) HOV lane in each direction on the SR-71 approximately between I-10 and SR-60, converting the existing four-lane expressway to an eight-lane freeway. The project will not only increase the capacity of the facility, but more importantly, upgrade the facility to the current standards while improving safety by eliminating at-grade intersections. The portion within the project limits, between I-10 and SR-60, is the last remaining segment along the SR-71 to be converted to freeway and to provide HOV lanes.

There are currently four (4) Alternatives under study as follows:

Alternative 1 – No-Build
This Alternative proposes that no action would be taken to construct any upgrades along SR-71 from I-10 to SR-60. As a result, the operational and safety characteristics of the roadway would remain the same and not be consistent with the local and regional transportation planning.

Alternative 2 – SR-71 Semi-Depressed with Overcrossing at 9th Street
This Alternative proposes to widen SR-71 to a standard 8-lane freeway including three (3) mixed flow lanes and one (1) HOV lane in each direction from I-10 to SR-60. The freeway alignment will be shifted to west (approximately 28-feet maximum) and the freeway profile will be semi-depressed (approximately 15-feet maximum) from south of Mission Boulevard interchange to Rio Rancho Road so that 9th Street can remain open to traffic as an overcrossing.

Alternative 3 – SR-71 At-Grade with Frontage Road with No Crossings
This Alternative proposes to widen SR-71 to a standard 8-lane freeway including three (3) mixed flow lanes and one (1) HOV lane in each direction from I-10 to SR-60. The freeway profile will be at-grade without any crossing between Mission Boulevard interchange and Rio Ranch Road. A pedestrian overcrossing near 9th Street and a frontage road on the west side of the freeway between Philips Drive and North Ranch Road are also proposed.

Alternative 4 – SR-71 At-Grade with Frontage Road with Undercrossing at Old Pomona Road
This Alternative proposes to widen SR-71 to a standard 8-lane freeway including three (3) mixed flow lanes and one (1) HOV lane in each direction from I-10 to SR-60. The freeway profile will be at-grade with an overcrossing proposed at Old Pomona Road, which connects to West Lexington Avenue. A pedestrian overcrossing near 9th Street and a frontage road on the west side of the freeway between Philips Drive and Old Pomona Road are also proposed.

Alternative 4A – SR-71 At-Grade with Frontage Road with No Undercrossing at Old Pomona Road
This Alternative proposes to widen SR-71 to a standard 8-lane freeway including three (3) mixed flow lanes and one (1) HOV lane in each direction from I-10 to SR-60. The freeway profile will be at-grade without any crossing between Mission Boulevard interchange and Rio Rancho Road. A

pedestrian overcrossing near 9th Street and a frontage road on the west side of the freeway between Philips Drive and Old Pomona Road are also proposed.

The proposed project is currently in environmental re-evaluation with target dates to commence construction in April 2025; and to complete construction by April 2029. Traffic data are projected to 2029 and 2050 to demonstrate fully developed traffic conditions following the opening of completed facilities and to consider the life of the proposed project, which occurs later than the current planning horizon year of 2035. The analysis years are selected to demonstrate conformity in the years during which peak emissions are expected based on the background concentration and anticipated increase in traffic volumes after the project is completed; and when worsening of PM conditions are expected with the traffic that is anticipated to grow during the life of the project.

The project is identified in the latest conforming 2012 Regional Transportation Plan (RTP) and in the 2011 Federal Transportation Improvement Program (FTIP) with Amendments as LA0B951 with the following description:

> Route 10 to Route 60 – Expressway to Freeway conversion – Add 1 HOV Lane and 1 Mixed Flow Lane

The 2012 RTP was adopted by Southern California Association of Governments (SCAG) on April 4, 2012; and was found to conform by the FHWA on June 4, 2012. The 2011 FTIP was adopted by SCAG on September 2, 2010; and the FHWA made its conformity determination on December 14, 2010. The Amendment to FTIP (Amendment #11-29) was adopted by SCAG on July 20, 2012; and the conformity determination was made by FHWA on July 24, 2012. The proposed project is identified as a Transportation Control Measure (TCM) and its timely implementation is a crucial element in reducing air pollutant emissions from roadway transportation sources.

$PM_{2.5}$ and PM_{10} Hot-Spot Analysis Methodology

The project is located within the South Coast Air Basin (SCAB) which is designated as nonattainment of federal standards for $PM_{2.5,}$ PM_{10}, and 8-hour ozone among others. The project is considered to be of air quality concern as discussed above. A qualitative hot-spot analysis for $PM_{2.5}$ and PM_{10} is therefore deemed necessary to satisfactorily meet the conformity requirements in accordance with EPA's March 10, 2006 final rule. Caltrans is currently in the process of preparing an environmental reevaluation for the proposed project.

A hot-spot analysis is defined in the 40CFR 93.101 as an estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standards. A project-level hot-spot analysis assesses the air quality impacts on a scale smaller than an entire nonattainment or maintenance area such as a congested freeway corridor. Such an analysis is a means of demonstrating that a transportation project meets Clean Air Act (CAA) conformity requirements to support state and local air quality goals with respect to potential localized air quality impacts.

CAA Section 176(c)(1)(B) is the statutory criterion that must be met by all projects in nonattainment and maintenance areas that are subject to transportation conformity. Section 176(c)(1)(B) states that federally supported transportation projects must not "cause or contribute to

any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area."

The EPA in its March 2006 Guidance has established the following two methods for completing $PM_{2.5}$ and PM_{10} hot-spot analyses:

A. Comparison to another location with similar characteristics,

B. Air quality studies for the proposed project location.

This Analysis uses a combined approach to demonstrate that the proposed project would not result in a new $PM_{2.5}$ or PM_{10} violation, worsen any existing violation, or delay attainment.

Types of Emissions Considered

In accordance with the March 2006 Guidance, this Analysis will be based on directly emitted $PM_{2.5}$ and PM_{10} emissions and will consider tailpipe, brake wear, and tire wear $PM_{2.5}$ and PM_{10} emissions. Precursors of particulate matter and secondary particles are not considered in this Analysis; but they are considered as part of the regional emission analysis prepared for the conforming RTP and TIP

Vehicles cause dust from paved and unpaved roads to be re-entrained, or re-suspended, in the atmosphere. According to the March 2006 final rule, road dust emission are to be considered for PM_{10} hot-spot analysis, and road dust emissions for $PM_{2.5}$ are to be considered in the hot-spot analyses only if the EPA or the state air agency has made a finding that such emissions are a significant contributor to the air quality problem (40CFR93.102(b)(3)). The South Coast Air Quality Management District (SCAQMD) has prepared and adopted in June 2007, a Final 2007 Air Quality Management Plan (Final 2007 AQMP) in which the paved road dust ranks high among the top ten categories of directly emitted $PM_{2.5}$ in the SCAB. The California Air Resources Board (CARB) incorporated the adopted 2007 AQMP for the SCAB as part of their State Implementation Plan (SIP) for $PM_{2.5}$. EPA has since approved the emissions inventory; reasonably available control measures/technology demonstration; reasonable further progress; and attainment demonstrations in November 2011 (76FR69928) while disapproving the SIP's contingency measures and related issues are being resolved.

A Draft 2012 AQMP has recently been released for public review. As with the Final 2007 AQMP, the Draft 2012 AQMP also ranks paved road dust as one of top 10 categories for directly emitted $PM_{2.5}$. Therefore, the re-entrained $PM_{2.5}$ road dust has been considered in this Analysis.

According to the project schedules, the construction will not last more than 5 years. Construction-related emissions due to this project are considered temporary as defined in 40 CFR 93.123(c)(5); and thus are not included in this Analysis. This project will comply with the SCAQMD Fugitive Dust Rules (Rule 403) for any fugitive dusts emitted during the construction. Excavation, transportation, placement, and handling of excavated soils shall result in no visible dust migration. A water truck or tank will be available within the project limits at all times to suppress and control the migration of fugitive dusts from earthwork operations. The project is

required comply with any state, federal, and/or local rules and regulations developed as a result of implementing control and mitigation measures proposed as part of their respective SIPs.

National Ambient Air Quality Standard

Nonattainment and maintenance areas are required to attain and maintain two standards for $PM_{2.5}$ as follows:

- 24-hour standard: 65 micrograms per cubic meter ($\mu g/m^3$) (1997 Standard)

  35 $\mu g/m^3$ (2006 Standard)

- Annual standard: 15 $\mu g/m^3$.

The 24-hour standard is based on a 3-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations; and, the annual standard is based on a 3-year average of annual mean $PM_{2.5}$ concentrations.

Nonattainment and maintenance areas are required to attain and maintain the following standard for PM_{10}:

- 24-hour standard: 150 $\mu g/m^3$.

The 24-hour PM_{10} standard is attained when the average number of exceedances in the previous three calendar years is less than or equal to 1. The annual PM_{10} standard of 50 $\mu g/m^3$ is no longer used for determining the federal attainment status.

Meteorology and Climate

The climate in and around the project area, as with all of Southern California, is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. In general, it maintains relatively moderate temperatures and comfortable humidity, and limits precipitation to a few storms during the winter "wet" season. Within the SCAB, temperatures are normally mild, except in the summer months, which commonly bring substantially higher temperatures. In all portions of the SCAB, temperatures above 100 degrees Fahrenheit have been recorded in recent years. Annual temperature in the vicinity of the proposed project (at Pomona Fairplex) is approximately 65 degrees Fahrenheit, averaged over three decades between 1981 and 2010.

Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night the wind generally slows and reverses direction traveling towards the sea. Wind directions alter by presence of local canyons, with wind tending to flow parallel to the canyons. During the transition period from one wind pattern to another, the dominant wind direction rotates into the south. The frequency of calm winds (less than 2 miles per hour) is approximately 0.02 percent. Therefore, there is little stagnation in the project vicinity, especially during busy daytime traffic hours. Figure 2 illustrates wind patterns at Pomona monitoring station less than 2 miles east of the proposed project.

Southern California frequently has temperature inversions that inhibit the dispersion of pollutants. Inversions may be either ground based or elevated. Ground based inversions, sometimes referred

to as radiation inversions, are most severe during clear, cold, early winter mornings. Under conditions of a ground-based inversion, very little mixing or turbulence occurs, and high concentrations of primary pollutants may occur local to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversions act as a lid or upper boundary and restrict vertical mixing. Below the elevated inversion, dispersion is not restricted. Mixing heights for elevated inversions are lower in the summer and more persistent. This low summer inversion puts a lid over the SCAB and is responsible for the high levels of ozone observed during summer months in the SCAB.

The 30-year average temperature, from 1981 to 2010, using data obtained from the Western Region Climate Center's Pomona meteorological station (#047050) shows the wintertime low of 41.5 degrees Fahrenheit in January. The summertime high is averaged at 90.6 degrees Fahrenheit in August. The rainfall season is from November to March with an annual average of 16.73 inches.

Ambient Concentration Data

Although the Pomona monitoring station is closer to the proposed project location; it does not monitor $PM_{2.5}$ and PM_{10}. Ambient $PM_{2.5}$ and PM_{10} data were therefore obtained from the Azusa monitoring station, and were reviewed to establish the current ambient background level within the project limits and to help evaluate future localized pollutant concentrations as affected by the proposed projects. The Azusa monitoring station is located approximately 0.45 miles north of I-210; and is approximately 9.5 miles northwest of the proposed project. Figure 3 illustrates the proximity of this monitoring station to the freeway and to the proposed project. Tables 1 through 3 summarize traffic data for the portion of I-210 in close proximity to the Azusa monitoring station; and provide comparison to the existing and forecast traffic along the SR-71 within the project limits.

Table 1. Existing traffic data (2010)

Location	ADT		% Truck
	Total	Truck	
I-210 near Azusa monitoring station (605 Interchange, PM 36.41)	265,000	17,914	6.76
SR-71 within the project limits (Post Mile 0.5 to 4.8)	69,000 – 92,000	4,920 – 9,421	7.13 – 10.24

Source: Caltrans Traffic Data Branch at http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm

Table 2. Traffic forecast for the proposed project (Opening year in 2029)

	ADT		% Truck
	Total	Truck	
Alternative 1 (No-Build)	83,134 – 116,587	8,629 – 15,390	10.21 – 15.26
Alternative 2	112,986 – 170,837	13,859 – 26,431	12.27 – 16.48
Alternative 3	114,127 – 196,096	14,145 – 28,704	12.39 – 16.57
Alternative 4	113,694 – 196,015	13,965 – 33,806	12.28 – 17.25
Alternative 4A	112,729 – 195,800	13,946 – 33,751	12.37 – 17.24

Source: Traffic Analysis Final Report by CH2MHill, August 2012

Table 3. Traffic forecast for the proposed project (Build-out year in 2050)

	ADT		% Truck
	Total	Truck	
Alternative 1 (No-Build)	93,888 – 131,669	9,745 – 17,381	10.21 – 15.26
Alternative 2	127,602 – 192,936	15,651 – 29,850	12.27 – 16.48
Alternative 3	128,891 – 221,463	15,974 – 32,417	12.39 – 16.57
Alternative 4	128,402 – 221,372	15,772 – 38,179	12.28 – 17.25
Alternative 4A	127,311 – 221,128	15,750 – 38,117	12.37 – 17.24

Source: Traffic Analysis Final Report by CH2MHill, August 2012

As presented in the tables above, the portion of SR-71 within the project limits, currently experiences volumes lower than the portion of I-210 near the Azusa monitoring station. However, with the implementation of the proposed project, this portion of SR-71 is projected to accommodate the level of traffic comparable to the portion of I-210 in the vicinity of the Azusa monitoring station.

The Azusa station is located in an area with mixed commercial and residential uses. The land use pattern along the proposed project also includes residential, commercial, and light to restricted industrial based on the aerial and review of the MND/FONSI approved in 2002.

Based on the comparison of the traffic volumes, land uses, and the proximity to the freeway, the ambient concentration data measured at the Azusa monitoring station are deemed representative for comparison to the proposed project. Table 4 summarizes ambient $PM_{2.5}$ and PM_{10} data at the Azusa monitoring station while Figure 4 illustrates and compares these ambient concentrations to the current federal standards.

Table 4. Ambient $PM_{2.5}$ and PM_{10} Monitoring Data at Azusa Station (in μ g/m^3)

	2006	2007	2008	2009	2010	2011
$PM_{2.5}$ 24-hour average	27	49	35	37	35	27
$PM_{2.5}$ annual average	15.4	15.7	14.0	12.6	10.8	11.4
PM_{10} 24-hour average (First Max)	81	83	98	74	70	65

Source: EPA AirData at http://www.epa.gov/airquality/airdata/

The ambient concentration data indicate that measurements at the Azusa station did not exceed the 1997 federal 24-hour $PM_{2.5}$ standard of 65 μg/m^3 in the past six years; but exceeded the 2006 standard of 35 μg/m^3 twice in 2007 and 2009. The data, meanwhile, shows a generally decreasing trend of 24-hour $PM_{2.5}$ concentrations with time. The annual average $PM_{2.5}$ concentrations at the Azusa station exceeded the federal annual $PM_{2.5}$ standard of 15 μg/m^3 in 2006 and 2007, but no exceedances occurred since then. The annual average $PM_{2.5}$ concentrations also exhibit a generally decreasing trend over the last six years. This downward trend in the ambient concentrations of $PM_{2.5}$ at the Azusa station is consistent with the projections in the Final 2007 AQMP. The recently-released Draft 2012 AQMP also predicts a downward trend in $PM_{2.5}$ emissions and anticipates attainment of the federal 24-hour $PM_{2.5}$ standard by 2014 with all

feasible control programs. It should be noted, however, that the Draft 2012 AQMP is currently in review and subject to further revisions and approval by EPA.

PM_{10} data presented in Table 4 shows that the monitored values for the 24-hour measurements did not exceed and were all well below the federal standard of 150 $\mu g/m^3$ in the past six years.

Traffic Conditions and Changes Due to the Project

Table 5 provides a snapshot of the current traffic conditions by summarizing daily average volumes, truck percentages, and speeds along the SR-71 within the project limits. It should be noted that the current year traffic conditions below have been obtained based on the SCAG model and by including the recently completed grade separation structure at the SR-71 intersection with Mission Boulevard.

Table 5. Daily traffic data for the current facility (2012)

Daily Volume	% Truck	Average Speeds, MPH			
		AM	Mid Day	PM	Night
87,135	9.17	34	36	30	49

Source: Traffic Analysis Final Report by CH2MHill, August 2012

The project proposes to add one mixed flow lane and one HOV lane in each direction, converting the existing 4-lane expressway to an 8-lane freeway facility. The project will not only increase the capacity of the facility, but more importantly, upgrade the facility to the current standards while improving safety by eliminating at-grade intersections. It should be noted that the SR-71 within the project limits, between I-10 and SR-60, is the last remaining segment to be converted to freeway and to provide HOV lanes.

Tables 6 and 7 below summarize future average daily traffic volumes, truck percentages, and speeds forecast along the SR-71 within the project limits. While traffic projections were conducted by CH2MHill in 7 to 10 individual segments within the project limits, the data are shown in the tables as averages over these segments. According to Tables 6 and 7, all the build alternatives (Alternatives 2 through 4A) are anticipated to result in improvements in vehicle speeds while accommodating more than 60 percent increase in the overall traffic volumes.

Table 6. Traffic forecast for opening year, 2029

	Daily Volume	Truck %	Average Speeds, MPH			
			AM	Mid Day	PM	Night
Alt 1 (No-Build)	95,790	13.75	32	36	27	48
Alt 2	120,140 MF 32,849 HOV	14.92	48 MF 51 HOV	51 MF 54 HOV	42 MF 46 HOV	60 MF 61 HOV
Alt 3	123,332 MF 39,368 HOV	15.06	48 MF 50 HOV	52 MF 52 HOV	43 MF 45 HOV	61 MF 61 HOV
Alt 4	123,540 MF 38,888 HOV	14.99	48 MF 50 HOV	51 MF 53 HOV	43 MF 45 HOV	61 MF 61 HOV
Alt 4A	123,390 MF 38,921 HOV	15.01	48 MF 50 HOV	52 MF 53 HOV	42 MF 46 HOV	61 MF 61 HOV

Source: Traffic Analysis Final Report by CH2MHill, August 2012

Table 7. Traffic forecast for build-out year, 2050

	Daily Volume	Truck %	Average Speeds, MPH			
			AM	Mid Day	PM	Night
Alt 1 (No-Build)	108,181	13.75	30	34	25	47
Alt 2	135,682 MF 37,099 HOV	14.92	46 MF 49 HOV	49 MF 53 HOV	40 MF 44 HOV	60 MF 61 HOV
Alt 3	139,287 MF 44,461 HOV	15.06	46 MF 48 HOV	50 MF 50 HOV	40 MF 43 HOV	60 MF 60 HOV
Alt 4	139,520 MF 43,919 HOV	14.99	46 MF 48 HOV	50 MF 51 HOV	40 MF 43 HOV	60 MF 60 HOV
Alt 4A	139,351 MF 43,956 HOV	15.01	46 MF 48 HOV	50 MF 51 HOV	40 MF 43 HOV	60 MF 60 HOV

Source: Traffic Analysis Final Report by CH2MHill, August 2012

Traffic conditions along the SR-71 corridor and the surrounding areas were considered in estimating direct and re-entrained $PM_{2.5}$ and PM_{10} emissions. Figure 5 illustrates the surrounding area and limits from where these traffic conditions were collected. The summary in Table 8 indicates that the implementation of the project alternatives results in increase in HOV traveling while reducing traveling on arterials and local streets.

Table 8. Summary of Vehicle Miles Traveled for SR-71 Corridor and Surrounding Areas

		FWY/Ramps	HOV	Expressway/ Principal Arterial	Minor Arterial	Collectors
2012	**Current**	3,017,164	353,394	589,723	365,876	31,657
2029	**Alt 1**	3,326,221	591,568	677,438	490,052	44,950
	Alt 2	3,536,244	728,723	496,029	436,309	38,459
	Alt 3	3,543,257	726,595	495,417	437,409	38,413
	Alt 4	3,544,397	723,361	488,435	451,395	38,870
	Alt 4A	3,545,900	726,479	490,307	430,931	37,313
2050	**Alt 1**	3,756,497	668,092	765,071	553,445	50,765
	Alt 2	3,993,688	822,989	560,195	492,749	43,434
	Alt 3	4,001,608	820,586	559,503	493,992	43,383
	Alt 4	4,002,895	816,934	551,618	509,787	43,899
	Alt 4A	4,004,593	820,456	553,732	486,676	42,140

Source: Traffic Analysis Final Report by CH2MHill, August 2012

$PM_{2.5}$ and PM_{10} Emissions

CT-EMFAC is utilized in estimating current and future project-level $PM_{2.5}$ and PM_{10} emissions for the project alternatives. CT-EMFAC is designed to model criteria pollutants, including $PM_{2.5}$ and PM_{10}, using the ARB's mobile source emissions inventory, EMFAC2007. EMFAC2007 is currently the latest version of emissions inventory made available by the EPA for use in

conformity analyses for projects in California. Since the project's build-out year is 2050 while EMFAC2007 provides emissions inventory for years up to 2040, the project-level emissions for 2050 were estimated based on the emissions inventory for 2040. This approach is considered conservative because the future emissions are anticipated to decrease further beyond 2040.

This Analysis also provides estimate of re-entrained road dust according to the latest EPA's AP-42 method (dated January 2011, noted below) and based on the ARB's default values of silt loading and average vehicle weight for the Los Angeles County portion of the SCAB.

$$E = k(sL)^{0.91} \times (W)^{1.02}$$

Direct and re-entrained $PM_{2.5}$ and PM_{10} emissions are estimated using the current and future traffic data obtained for 7 to 10 individual segments along the SR-71 corridor within the project limits. Another set of direct and re-entrained $PM_{2.5}$ and PM_{10} emissions are estimated based on the current and future traffic data obtained for the surrounding area illustrated in Figure 5. A summary of direct and entrained $PM_{2.5}$ and PM_{10} emissions data along the SR-71 corridor as well as for the surrounding area is presented in Table 9.

Table 9. Summary of the current and future PM10 and PM2.5 emissions estimate

Emissions in lb/day		Project Corridor				Surrounding Area			
		PM10		PM2.5		PM10		PM2.5	
		Direct	Re-ent	Direct	Re-ent	Direct	Re-ent	Direct	Re-ent
2012	Current	36.9	77.3	24.3	19.3	419.3	1,376.1	266.0	344.0
2029	Alt 1	38.9	83.9	25.1	21.0	465.5	1,706.9	288.4	426.7
	Alt 2	52.4	108.6	30.8	27.1	462.7	1,621.0	279.5	405.3
	Alt 3	52.3	108.2	30.8	27.1	463.1	1,623.5	279.7	405.9
	Alt 4	52.1	108.0	30.7	27.0	463.7	1,644.3	280.1	411.1
	Alt 4A	52.2	108.1	30.8	27.0	463.7	1,644.3	280.1	411.1
2050	Alt 1	48.4	94.8	30.1	23.7	569.9	1,927.7	339.2	481.9
	Alt 2	63.0	122.6	35.5	30.6	568.2	1,830.7	333.4	457.7
	Alt 3	62.8	122.2	35.4	30.5	566.6	1,833.5	328.8	458.4
	Alt 4	62.8	122.0	35.4	30.5	566.4	1,857.0	328.3	464.3
	Alt 4A	62.8	122.1	35.4	30.5	566.4	1,857.0	328.3	464.3

Source: Traffic Analysis Final Report by CH2MHill, August 2012

A summary of $PM_{2.5}$ and PM_{10} emissions in Table 9 indicates that the implementation of the project alternatives would result in increase in $PM_{2.5}$ and PM_{10} emissions along the SR-71 corridor when compared to the No-Build scenario or Alternative 1. This increase in emissions is attributed to more than 60 percent of increase in traffic volumes as presented in Tables 6 and 7. Traffic volumes are projected to increase when the existing at-grade intersections are eliminated and HOV lanes are added. It should be noted, however, that the speeds along the new freeway are anticipated to increase. Furthermore, combined emissions of direct and re-entrained along the SR-71 corridor are anticipated to increase only by about 20 percent while the traffic volumes

increase by 60 percent or more when compared to the No-Build. According to an operational analysis by CH2MHill, truck drivers currently experience approximately 463 vehicle hours of delay through the existing at-grade intersections within the project limits. The delay for truck drivers is anticipated to grow to approximately 955 and 1,221 vehicle-hours in 2029 and 2050, respectively. All project alternatives propose to remove at-grade intersections and these delays for truck drivers are anticipated to be eliminated.

The effect of implementing the project alternatives is better captured in the emissions estimate from within the surrounding, but localized, areas illustrated in Figure 5. As summarized in Table 8, VMTs for the project alternatives are anticipated to increase by more than 2 percent in the surrounding area. In the mean time, combined direct and re-entrained PM_{10} emissions for all project alternatives are anticipated to decrease by more than 3 percent when compared to the No-Build or Alternative 1 in all years. The combined direct and re-entrained $PM_{2.5}$ emissions are anticipated to decrease by more than 3.4 percent when compared to the No-Build or Alternative 1 in all years. Reduction in PM_{10} and $PM_{2.5}$ emissions within the surrounding area is consistent across all project alternatives (Alternatives 2 through 4A) with varying degrees.

CONCLUSIONS

Transportation conformity is required under CAA Section 176(c) to ensure that federally supported highway and transit project activities are consistent with the purpose of the SIP. Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant AAQS. As required by the March 10, 2006 final rule, this Analysis demonstrates that the projects meet the CAA conformity requirements to support state and local air quality goals with respect to potential localized air quality impacts as indicated below.

Historical meteorology and climate data support that the regional and local meteorological and climatic conditions have been relatively consistent within the last 30 years and likely consistency is anticipated through the build-out year of 2059. In addition, no significant changes are anticipated in the current general terrain and geographic locations of the projects in relation to the coastal SCAB areas.

Based on the traffic data presented, the existing ADT and truck volumes along the I-210 near the Azusa monitoring station are comparable to those along the future SR-71 within the project limits. Based on the recent data at the Azusa monitoring station, there is a generally declining trend of ambient $PM_{2.5}$ concentrations. In addition, PM_{10} concentrations monitored at the Azusa station have all been well below the federal standard. Based on the Final 2007 AQMP and in the Draft 2012 AQMP, further decrease in $PM_{2.5}$ and PM_{10} emissions is expected to continue in future years so that attainment of the federal 24-hour $PM_{2.5}$ standard is anticipated by 2014 with feasible control programs.

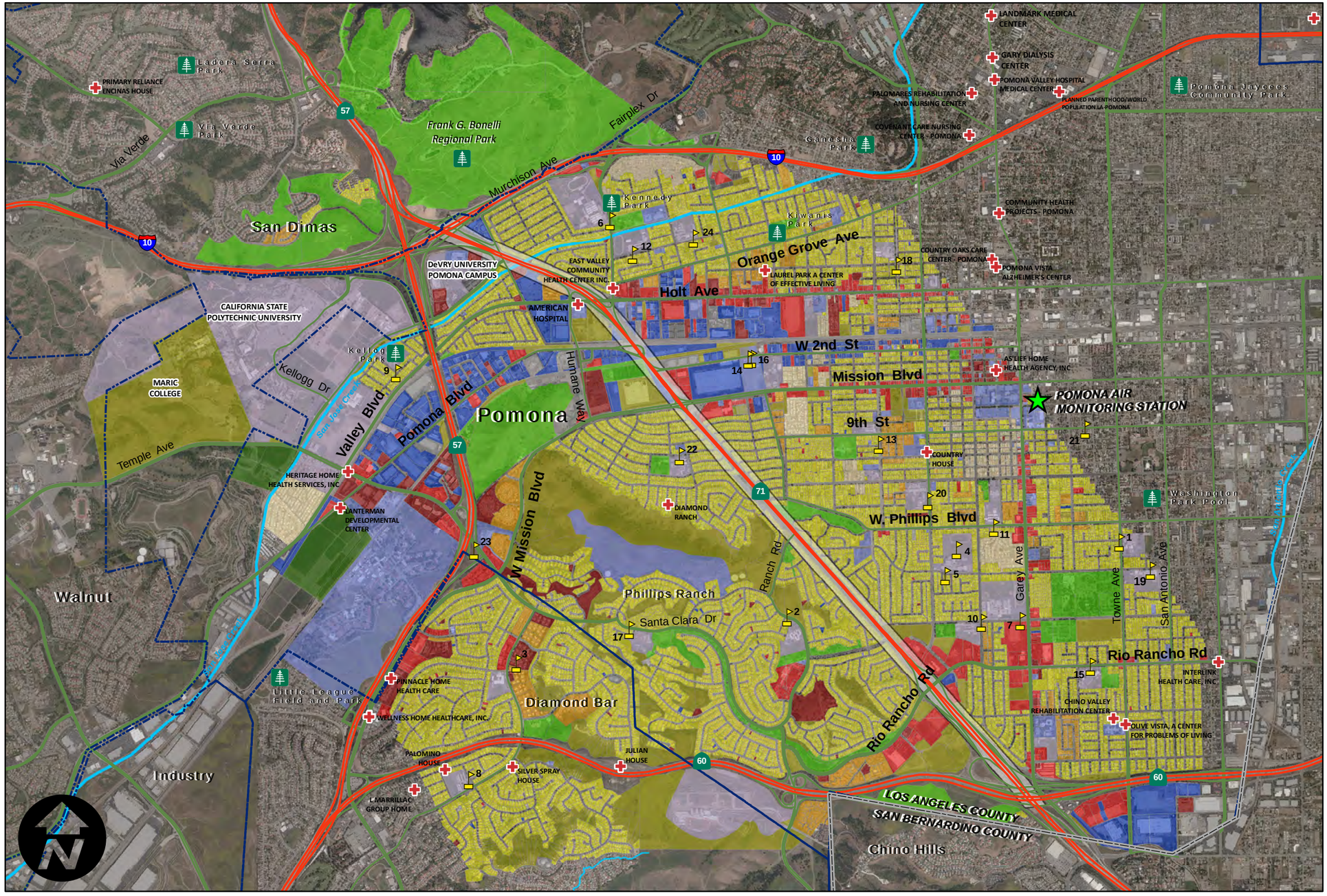
Federal regulations and the State's Diesel Risk Reduction Plan require future diesel vehicles to have substantially cleaner engines and to use fuels with lower sulfur contents. Many federal and state regulations, such as CARB's Truck and Bus Regulations, require that emissions from heavy duty trucks be reduced in future years. These federal and state requirements would help further

reduce $PM_{2.5}$ and PM_{10} emissions in the future by essentially lowering per-vehicle emissions for each of the diesel vehicles.

As summarized in Tables 6 and 7, overall average traffic volumes along the SR-71 project corridor are projected to increase by more than 60 percent with the implementation of the project alternatives. Also as indicated in Table 9, implementation of the project alternatives would increase overall VMTs by more than 2 percent within the surrounding area. Despite the increase in the overall VMTs, implementation of the project alternatives would result in lowering emissions of $PM_{2.5}$ and PM_{10} in the surrounding area when compared to the No-Build. This decrease in the PM emissions in the surrounding area is anticipated because all project alternatives propose to eliminate at-grade intersections and reduce associated delays currently experienced by truck drivers; and affect traffic distribution in the surrounding area.

The historical meteorology and climate data, ambient concentrations and their declining trends, and the Federal regulations and the State's Plan and Regulations, support the assertion that the projects will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. Activities of the project alternatives should, therefore, be considered consistent with the purpose of the SIP and it should be concurred that the project conforms to the requirements of the CAA.

Figures



LEGEND

Schools

1, Alcott Elementary
2, Decker Elementary
3, Diamond Point Elementary
4, Diamond Ranch High
5, Fremont Middle
6, Ganesha Senior High
7, Garey Senior High
8, Golden Springs Elementary
9, Kellogg Polytechnic Elementary
10, Lexington Elementary
11, Madison Elementary
12, Marshall (John) Middle
13, Mendoza Elementary
14, Park West High (Cont.)
15, Philadelphia Elementary
16, Pomona Alternative (Pas)
17, Ranch Hills Elementary
18, Roosevelt Elementary
19, Simons Middle
20, Vejar Elementary
21, Washington Elementary
22, Westmont Elementary
23, International Polytechnic High
24, Arroyo Elementary

Parks
Healthcare Facilities
Highways
Proposed Project on Route 71

Landuse

Single Family Residential
Multi-Family Residential
Other Residential
General Office
Commercial and Services
Facilities
Education
Military Installations
Industrial
Transportation, Communications, and Utilities
Mixed Commercial and Industrial
Mixed Urban
Open Space and Recreation
Agriculture
Vacant
Water
Under Construction
Undevelopable
Unknown

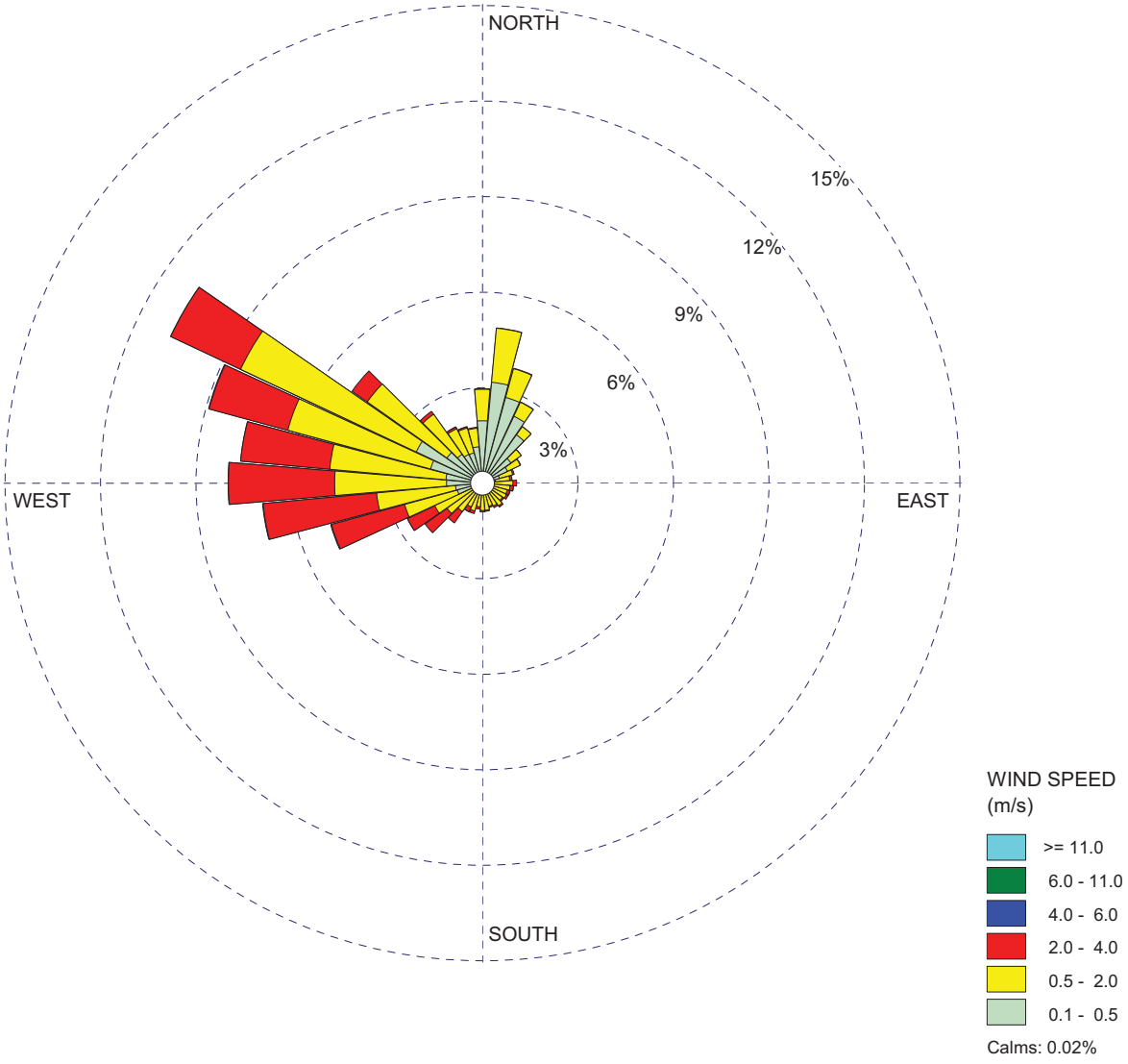
FIGURE 1. SENSITIVE RECEPTOR MAP
STATE ROUTE 71 FROM INTERSTATE 10 TO STATE ROUTE 60
California Department of Transportation District 7, Los Angeles

WIND ROSE PLOT:

poma

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **2005-2007 Jan 1 - Dec 31 00:00 - 23:00**	COMPANY NAME: Caltrans, District 7	
		MODELER:	Figure 2
	CALM WINDS: **0.02%**	TOTAL COUNT: **25892 hrs.**	
	AVG. WIND SPEED: **1.18 m/s**	DATE: **1/28/2009**	PROJECT NO.:

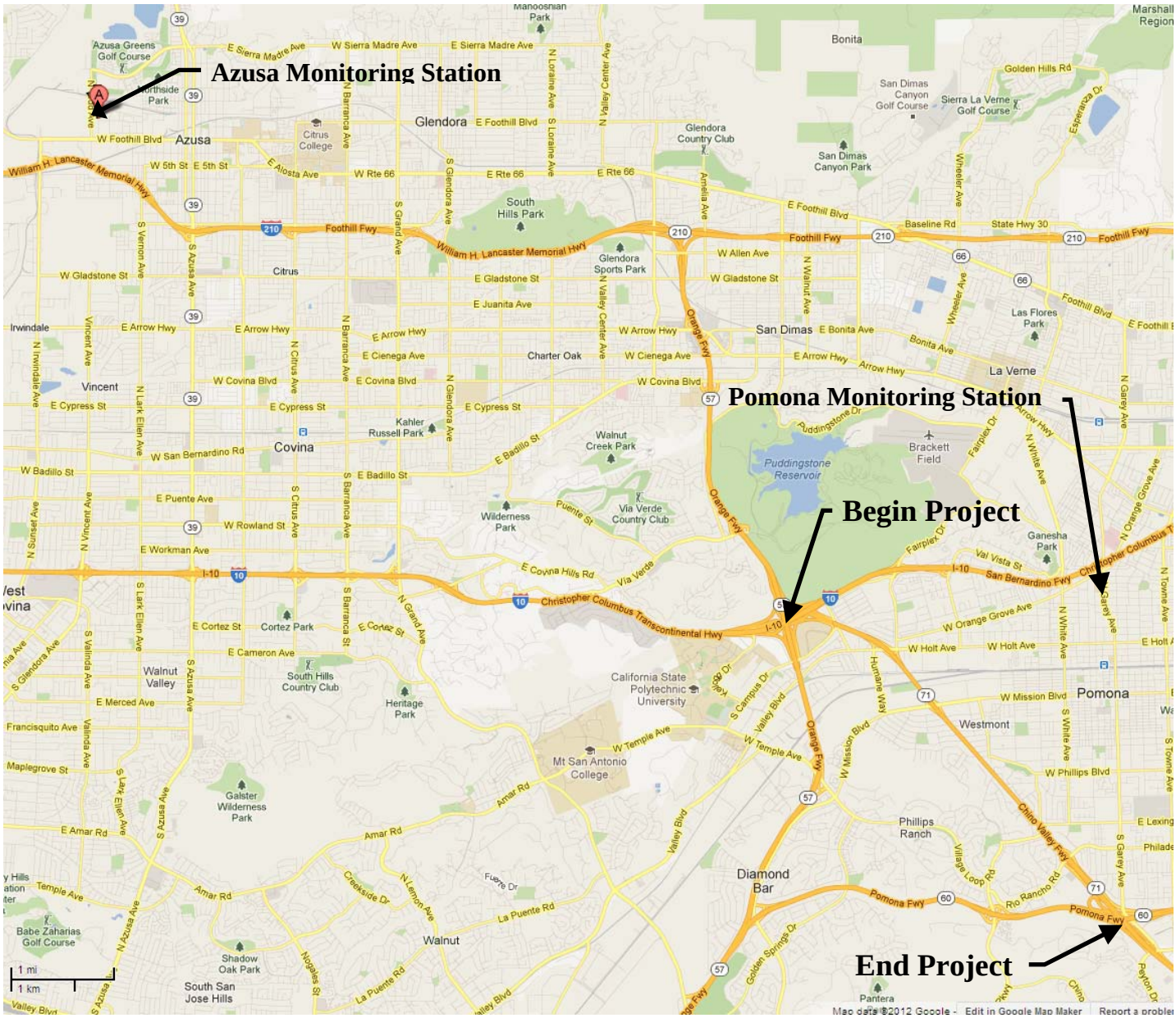


Figure 3. Location of Air Monitoring Station and Project Limits

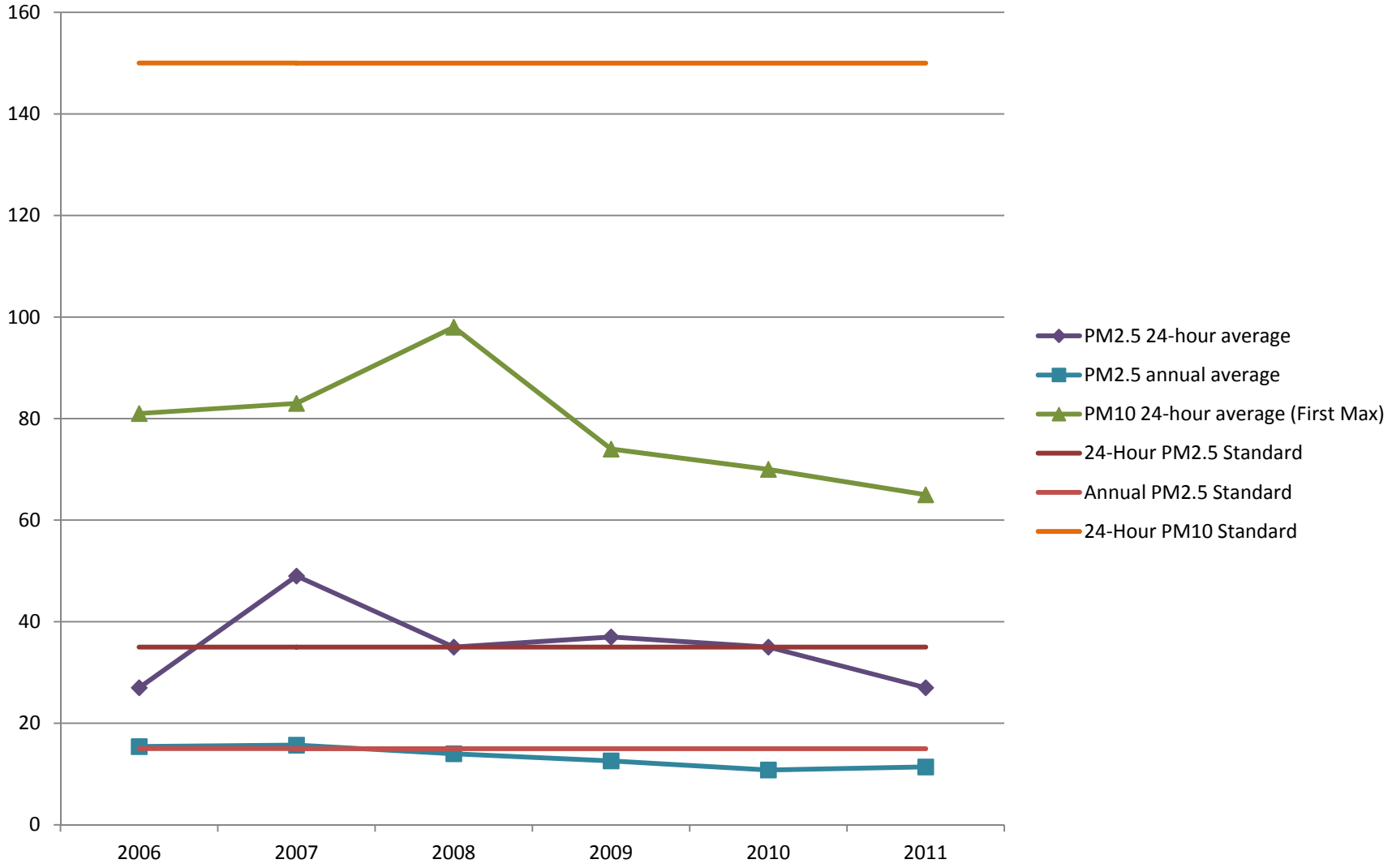


Figure 4. Ambient $PM_{2.5}$ and PM_{10} Data at Azusa Monitoring Station

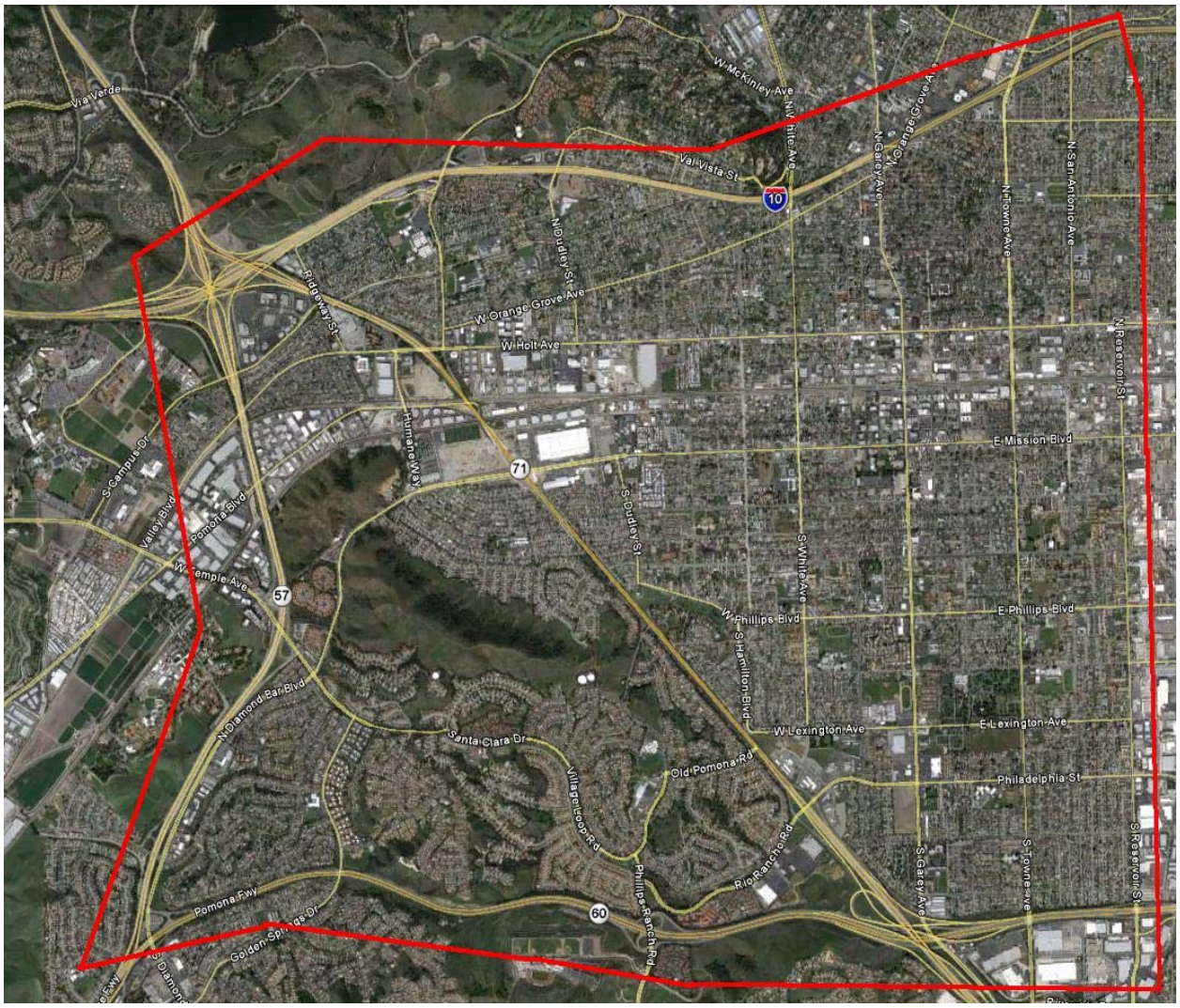


Figure 5. Limits of surrounding area